

## WHAT IS CLAIMED IS:

- 1           1.     A concrete mixing truck for transporting concrete from one  
2 location to another comprising:  
3                 a chassis including: a frame, a first power source coupled to the  
4 frame, wheels coupled to the frame, and a first drivetrain coupling the first  
5 power source and the wheels;  
6                 a second drivetrain coupled to a second power source; and  
7                 a mixing drum coupled to the frame and to the second drivetrain,  
8 the drum comprising:  
9                     a wall defining a first end of the drum and a second end of  
10 the drum;  
11                     a drive ring coupled to the first end of the drum and  
12 comprising:  
13                         a hub operatively coupled to the second drivetrain;  
14                     and  
15                         a plurality of extensions extending outwardly from  
16 the hub into the wall of the drum, at least one of the extensions  
17 including an aperture extending therethrough;  
18                     wherein rotation of the hub by the second drivetrain causes  
19 rotation of the drum.
- 1           2.     The concrete mixing truck of claim 1, wherein the first power  
2 source and the second power source are the same power source.
- 1           3.     The concrete mixing truck of claim 1, wherein the wall includes  
2 first layer and a second layer exterior to the first layer.
- 1           4.     The concrete mixing truck of claim 3, wherein the extensions  
2 extend into the second layer of the wall.
- 1           5.     The concrete mixing truck of claim 4, wherein the first layer is  
2 made from an elastomeric material.

1           6.     The concrete mixing truck of claim 5, wherein the second layer is  
2     made from a reinforced composite material including fibers.

1           7.     The concrete mixing truck of claim 6, wherein the aperture is  
2     configured to allow resin used in the construction of the second layer of the  
3     drum to infiltrate the aperture.

1           8.     The concrete mixing truck of claim 7, wherein the fiber in the  
2     second layer extends between the extensions.

1           9.     The concrete mixing truck of claim 8, wherein the hub is  
2     substantially cylindrical.

1           10.    The concrete mixing truck of claim 9, wherein the extensions  
2     extend radially outward from the hub.

1           11.    The concrete mixing truck of claim 10, wherein the extensions are  
2     spaced apart around the hub.

1           12.    The concrete mixing truck of claim 1, wherein the extensions are  
2     triangular.

1           13.    The concrete mixing truck of claim 1, wherein the extensions are  
2     rectangular.

1           14.    The concrete mixing truck of claim 1, wherein the drive ring is  
2     integrally formed as a single unitary body.

1           15.    The concrete mixing truck of claim 14, wherein drive ring is  
2     formed from a cast material.

1           16.    A composite, heavy duty rotary concrete mixing drum for coupling  
2     to a vehicle having a drivetrain for rotating the drum, the drum comprising:  
3                a wall defining a first end of the drum and a second end of the  
4     drum;

5 a drive ring coupled to the first end of the drum and comprising:  
6 a hub operatively coupled to the drivetrain; and  
7 a plurality of extensions extending outwardly from the hub  
8 into the wall of the drum, at least one of the extensions including an  
9 aperture extending therethrough;  
10 wherein rotation of the hub by the second drivetrain causes  
11 rotation of the drum.

1 17. The concrete mixing truck of claim 16, wherein the wall includes  
2 a first layer and a second layer.

1 18. The concrete mixing truck of claim 17, wherein the extensions  
2 extend into the second layer of the wall.

1 19. The concrete mixing truck of claim 18, wherein the first layer is  
2 made from an elastomeric material.

1 20. The concrete mixing truck of claim 19, wherein the second layer  
2 is made from a fiber reinforced composite material.

1 21. The concrete mixing truck of claim 20, wherein the aperture is  
2 configured to allow resin used in the construction of the second layer of the  
3 drum to infiltrate the aperture.

1 22. The concrete mixing truck of claim 21, wherein the fiber in the  
2 second layer extends between the extensions.

1 23. The concrete mixing truck of claim 22, wherein the hub is  
2 substantially cylindrical.

1 24. The concrete mixing truck of claim 23, wherein the extensions  
2 extend radially outward from the hub.

1 25. The concrete mixing truck of claim 24, wherein the extensions are  
2 spaced apart around the hub.

1           26.   The concrete mixing truck of claim 16, wherein the extensions are  
2 triangular.

1           27.   The concrete mixing truck of claim 16, wherein the extensions are  
2 rectangular.

1           28.   The concrete mixing truck of claim 16, wherein the drive ring is  
2 formed from a cast material.

1           29.   The concrete mixing truck of claim 28, wherein the cast material  
2 is off-tempered ductile iron.

1           30.   A composite, heavy duty rotary concrete mixing drum for coupling  
2 to a vehicle having a drivetrain for rotating the drum, the drum comprising:  
3                   a wall defining a first end of the drum and a second end of the  
4 drum;

5                   a drive ring integrally formed as a single unitary body from a cast  
6 material, wherein the drive ring is coupled to the first end of the drum and  
7 comprising:

8                           a hub operatively coupled to the drivetrain; and

9                           a plurality of extensions extending outwardly from the hub  
10 into the wall of the drum;

11                   wherein rotation of the hub by the second drivetrain causes  
12 rotation of the drum.

1           31.   The concrete mixing truck of claim 30, wherein at least one of the  
2 extensions includes a aperture extending therethrough.

1           32.   The concrete mixing truck of claim 30, wherein the wall includes  
2 an first layer and a second layer.

1           33.   The concrete mixing truck of claim 32, wherein the extensions  
2 extend into the second layer of the wall.

1           34.    The concrete mixing truck of claim 33, wherein the first layer is  
2   made from an elastomeric material.

1           35.    The concrete mixing truck of claim 34, wherein the second layer  
2   is made from a fiber reinforced composite material.

1           36.    The concrete mixing truck of claim 35, wherein the aperture is  
2   configured to allow resin used in the construction of the second layer of the  
3   drum to infiltrate the aperture.

1           37.    The concrete mixing truck of claim 36, wherein the fiber in the  
2   second layer extends between the extensions.

1           38.    The concrete mixing truck of claim 37, wherein the hub is  
2   substantially cylindrical.

1           39.    The concrete mixing truck of claim 38, wherein the extensions  
2   extend radially outward from the hub.

1           40.    The concrete mixing truck of claim 39, wherein the extensions are  
2   spaced apart around the hub.

1           41.    The concrete mixing truck of claim 30, wherein the extensions are  
2   triangular.

1           42.    The concrete mixing truck of claim 30, wherein the extensions are  
2   rectangular.

1           43.    The concrete mixing truck of claim 30, wherein the cast material  
2   is off-tempered ductile iron.

1           44.    A drive ring for coupling to a heavy duty rotary concrete mixing  
2   drum capable of attachment to a vehicle having a drivetrain for rotating the  
3   drum, the drive ring comprising:

4 a hub configured to be operatively coupled to the drivetrain of the  
5 vehicle; and

6 a plurality of projections extending outwardly from the hub and  
7 configured to engage the drum, at least one of the projections including an  
8 aperture.

9 45. The drive ring of claim 44, wherein the aperture is configured to  
10 allow resin used in the construction of the drum to infiltrate the aperture.

1 46. The drive ring of claim 44, wherein the projections are configured  
2 to allow fiber used in the construction of the drum to extend between the  
3 projections.

1 47. The drive ring of claim 44, wherein the hub is substantially  
2 cylindrical.

1 48. The drive ring of claim 47, wherein the projections extend radially  
2 outward from the hub.

1 49. The drive ring of claim 44, wherein the distance between each of  
2 the projections around the hub is less than 6 inches.

1 50. The drive ring of claim 44, wherein the plurality of projections  
2 includes 12 projections.

1 51. The drive ring of claim 48, wherein the projections are spaced  
2 apart around the periphery of the hub.

1 52. The drive ring of claim 44, wherein the projections are triangular.

1 53. The drive ring of claim 44, wherein the projections are  
2 rectangular.

1 54. The drive ring of claim 44, wherein the drive ring is integrally  
2 formed as a single unitary body from a cast material.

1            55.    The drive ring of claim 54, wherein the cast material is off-  
2    tempered ductile iron.

1            56.    The drive ring of claim 44, wherein the extensions are configured  
2    to angle toward the mixing drum.